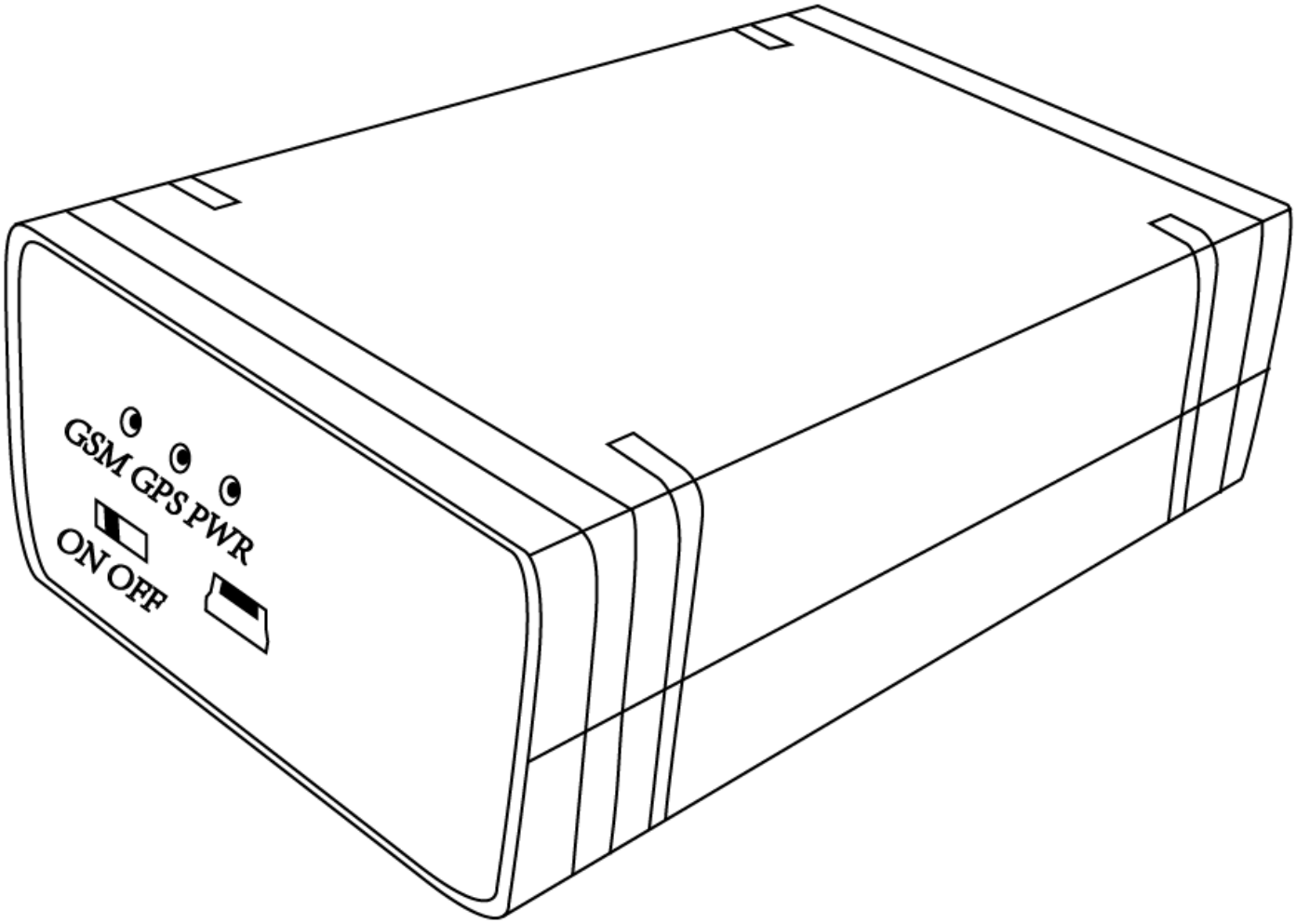


G6S/G3S User Manual

V1.6

Copyright © 2013 Gosafe

ATTENTION!

□Do not disassemble the device. Do not touch before unplugging the power supply if the device is damaged, the power supply cables are not isolated or the isolation is damaged.

□All wireless data transferring devices produce interference that may affect other devices which are placed nearby.

□The device may be connected only by qualified individuals.

□The device must be firmly fastened in the predefined location.

□The device is susceptible to water and humidity.

INSTRUCTIONS OF SAFETY

□This chapter contains information on how to operate “G6S/G3S” safely.

□BY following these requirements and recommendations you will avoid dangerous situations. You must read these instructions carefully and follow the strictly before operating the device!

□The device uses a 8V-32V DC power supply. The nominal voltage is 12V DC. It is advised to transport the device in an impact-proof package.

□Before usage, the device should be placed so that its LED indicators are visible, which show what status of operation the device is in.

□When connecting the connection cables to the vehicle, the appropriate jumpers of the power supply of the vehicle should be disconnected.

□Before dismounting the device from the vehicle, the connection must be disconnected.

LEGAL NOTICE

Copyright © 2013 Gosafe
All rights reserved. Reproduction, transfer, distribution or storage of part or all of the contents in this document in any form without the prior written permission of Gosafe is prohibited.
1-Wire is a registered trademark of Dallas Semiconductor.
Other products and company names mentioned herein may be trademarks or trade names of their respective owners.

INTRODUCTION

The G6S/G3S Feature Rich Powerful GPS Tracker is the latest solution for track and trace applications and extreme level fleet management.
G6S/G3S is designed for service providers, integrators, and enterprise customers to enhance mobile resources and improve their dispatch system; the G6S/G3S is a dependable quad-band GSM/GPRS tracking device, delivering the key features fulfilling the most demanding applications: fleet management, insurance telemetric, dispatch, vehicle location and recovery, and more.

With accurate GPS location performance, a robust programmable rules engine, 2-axis accelerometer for measuring driver behavior and vehicle impacts, geo-fencing, messaging and much more, the G6S/G3S is designed for powerful solution deployment. The G6S/G3S also includes optional routing and optimization with Garmin® FMI (Fleet Management Interface) - a key part of today's fleet management.

The G6S/G3S is powered by over-the-air device management and maintenance system, (Programming, Updates, and Logistics System). FOTA (Firmware update over the air), GSM Jamming detection and 156 hardware based geo-fences makes this the perfect choice for superior safety and security of your vehicle.

Contents

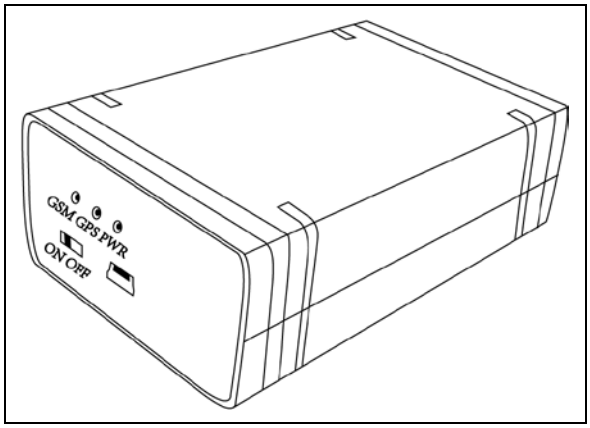
ATTENTION! 2
INSTRUCTIONS OF SAFETY 2
LEGAL NOTICE 3
INTRODUCTION 3
1. Packing List 5
2. Specifications 6
3. Overview 7
4. Installation 9
5. I/O Connector 11
6. LED Indicator Behavior 12
7. User Command 13
8. Message Explanation 15
Appendix 18
Optional accessory 18

1. Packing List

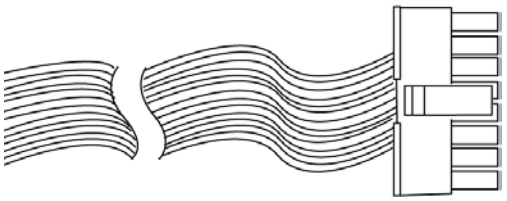
■Standard

The G6S/G3S box is packaged with all the components that is necessary for operation, it contains:

□G6S/G3S device x1



□2*8/2*5 PIN I/O connector cable x1

To connect with external power supply and optional accessory		To the back panel I/O connector of device

NOTE: SIM card which for GSM/GPRS connectivity is not supplied in the package, please consult your local SIM provider for further information.

■Optional accessory

Name	Purpose
USB cable	To configure device via configuration tool on computer
External GPS antenna	It helps to fix GPS faster
Microphone	It enables device for voice monitoring features
*Speaker	It enables device for voice conversation
*iButton	For driver ID verification via 1WIRE link
*DS18B20	Temperature sensor via 1WIRE link
Immobilizer	It enables the device to kill/restore engine
Panic button	Device reports or calls when this button being pressed
*DB9 cable	Communicate with computer via RS232 serial link
*GARMIN cable	Communicate with GARMIN PND
Magic tape	It helps to attach device firmly
Fuse	Protecting device from electrical surge
Backup battery	Rechargeable, Li-Po 3.7V, 250mAh

*NOTE: * indicates only for G6S*

Please refer chapter Appendix for further details and installation guide for optional accessory

2. Specifications

Physical	Dimension	80(L)x51.5(W)x26(H)mm	
	Weight	~75g (With battery)	
Environment	Operating temperature	-40℃~+80℃ (without backup battery) -10℃~+50℃ (with backup battery)	
I/O connector	ACC input	1 channel	
	Digital input	2 channels	
	Analog/Digital	*2 channels	
	Digital output	3 channels	
	*1WIRE	Maxim Integrated	
	*RS232 serial link	RxD & TxD	
	Microphone	1 channel	
	*Speaker	SPK+ & SPK-	
USB	Mini USB	2.0	
CPU	ARM	STM32F103	UcOS
LED indicator	3 LED indicators	GSM & GPS & POWER	
Power supply	External	DC 8 to 32V	
	Backup battery	Type	Rechargeable, Li-Po 3.7V, 250mAh
Power consumption	Standby: 70mA@12V, Working: 100mA@12V		
GSM/GPRS	Antenna	Built-In	
	Model	Cinterion BGS2-W	
		Quad band: GSM 850/900/1800/1900MHz	
		Multiple-slot Class 8 (dual band)/10 (quad band) GPRS class 10/Station class B	
		TCP/IP over PPP	
	SIM card	1.8V & 3.3V	
GPS	Internal antenna	25*25 with amplifier	
	External antenna	GPS Active Antenna	
	Model	uBlox NEO 6M	
	Channel	50 Parallel Channels	
	Accuracy	Autonomous<2.5M	
	Sensitivity	-162dBm	
Sensor	Vibration sensor	Built-In	
	Accelerate sensor	Built-In, 2-axis	
Flash storage	16Mbits	Built-In, Maximum to save 8,000 GPS postions	

*NOTE: * indicates only for G6S*

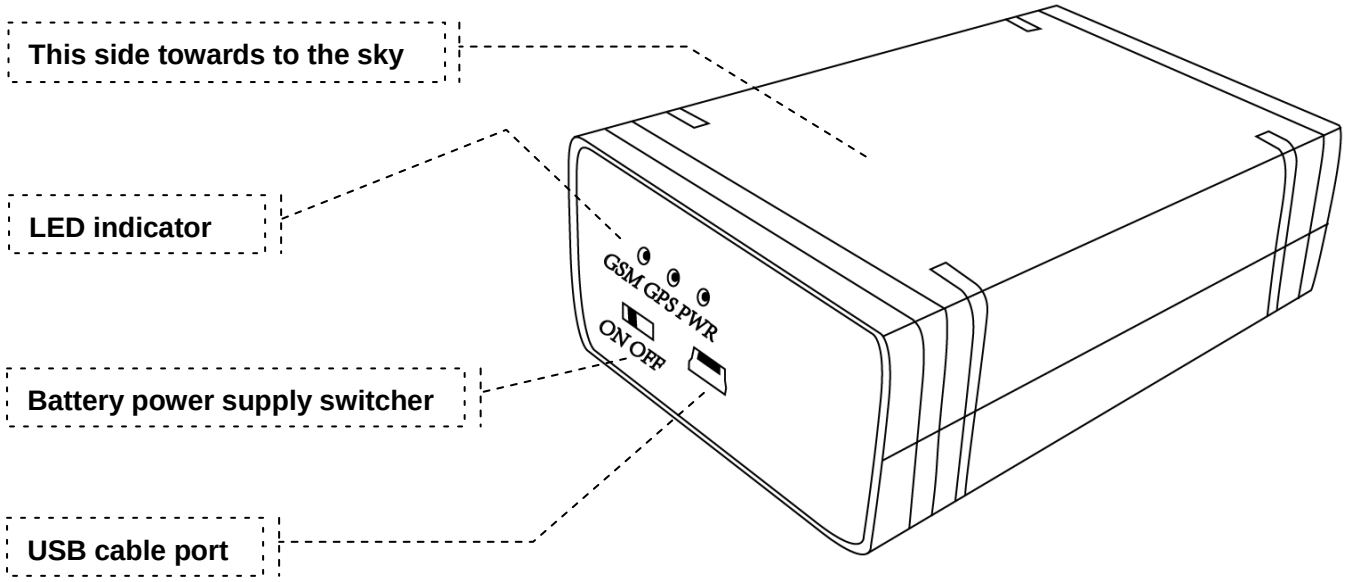
3. Overview

3.1. Device Capabilities

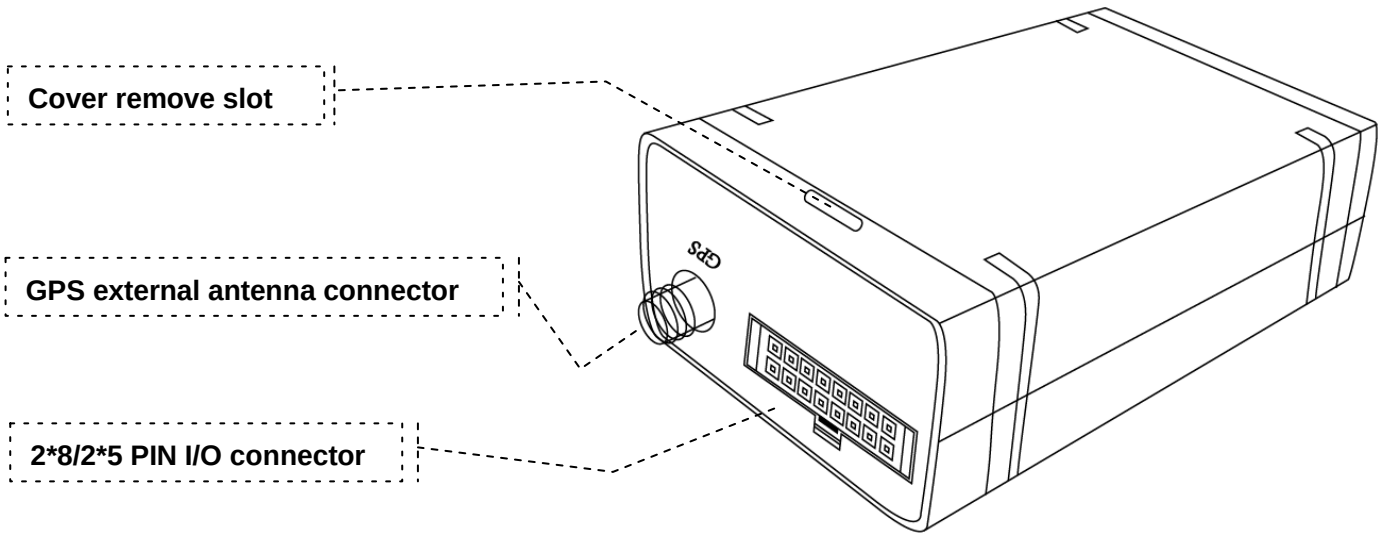
- ✓ FOTA, Firmware Upgrade Over The Air
- ✓ Flexible Programming Rules
- ✓ Garmin® FMI
- ✓ 1-Wire® Interface
- ✓ GSM Jamming Detection
- ✓ Quad Band GSM Modem
- ✓ HDOP For Precise Location
- ✓ Multiple Data Upload Modes
- ✓ 2-Axis Accelerometer Sensor
- ✓ 156 Hardware Based Geo-Fence/Point of interest
- ✓ Over Speed Management
- ✓ Multiple Inputs & Outputs
- ✓ Configurable Inputs & Outputs
- ✓ Internal Backup Battery

3.2. Mechanical construction

■Front panel view



■Rear panel view



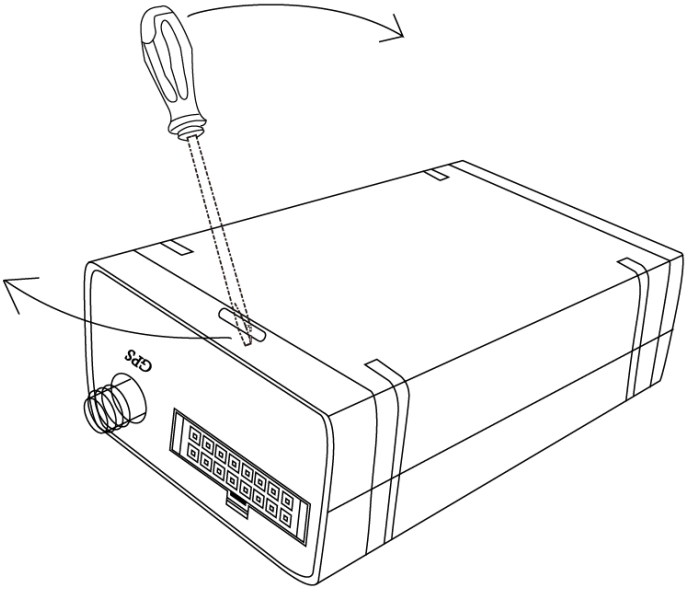
4. Installation

4.1. Remove the cover

1, On the back panel of the device, there is a small slot at the top of it.

2, Utilize a screw driver or sticker, insert it to the slot a little bit.

3, Swing the screw driver at the direction as illustrated and the cover will slide out.

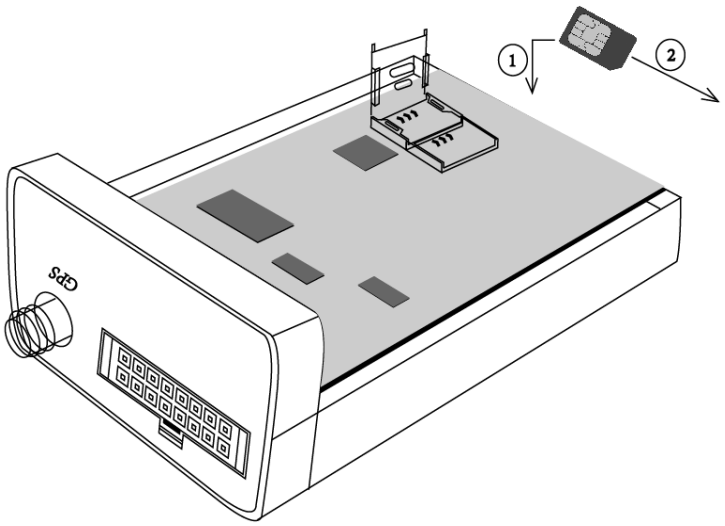


4.2. Insert the SIM card

1, Flip up cover of SIM holder, facing metal side of SIM card to the PCB board as step1.

2, Insert SIM card to cover then flip it down, pull the cover at the direction as step2 to lock up SIM card firmly.

Note: Please disconnect any kind of power source for device in advance.



4.3. Install direction

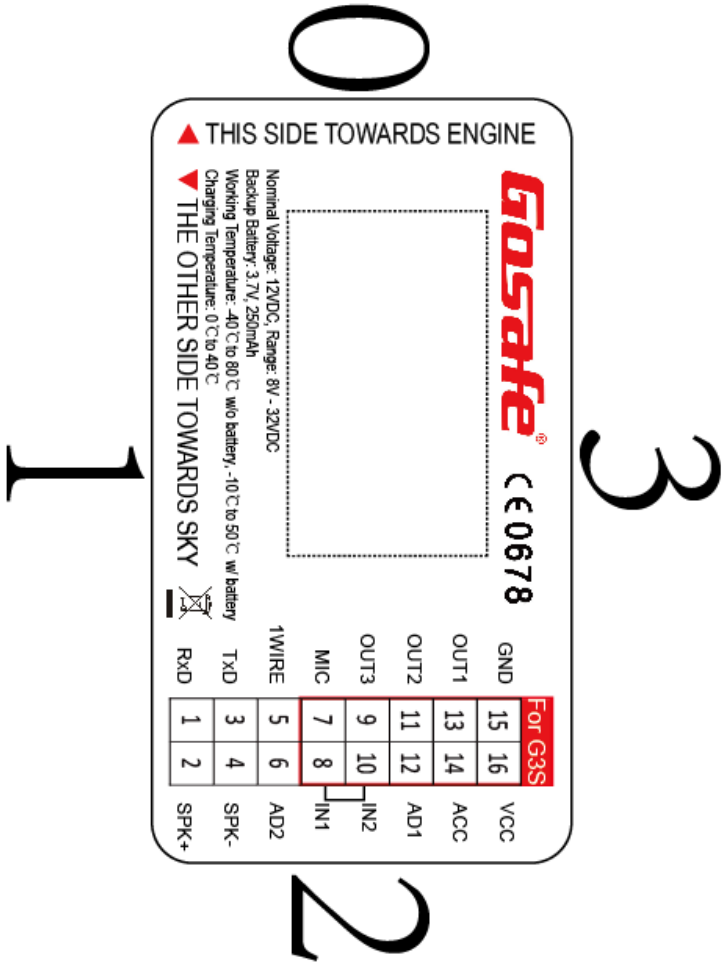
■G6S/G3S has accident & harsh detection features that based on built-in 2-axis sensor. Its accuracy will be affected by install direction of device, please find the sticker on housing of device for recommended direction.

1, By default you need to point side “0” to the engine, which is the direction of vehicle heading.

2, If you prefer other side pointing to engine, please send command to change the default setting of installation direction.
E.g.:
Side “1” is pointing to engine,
Command to send:

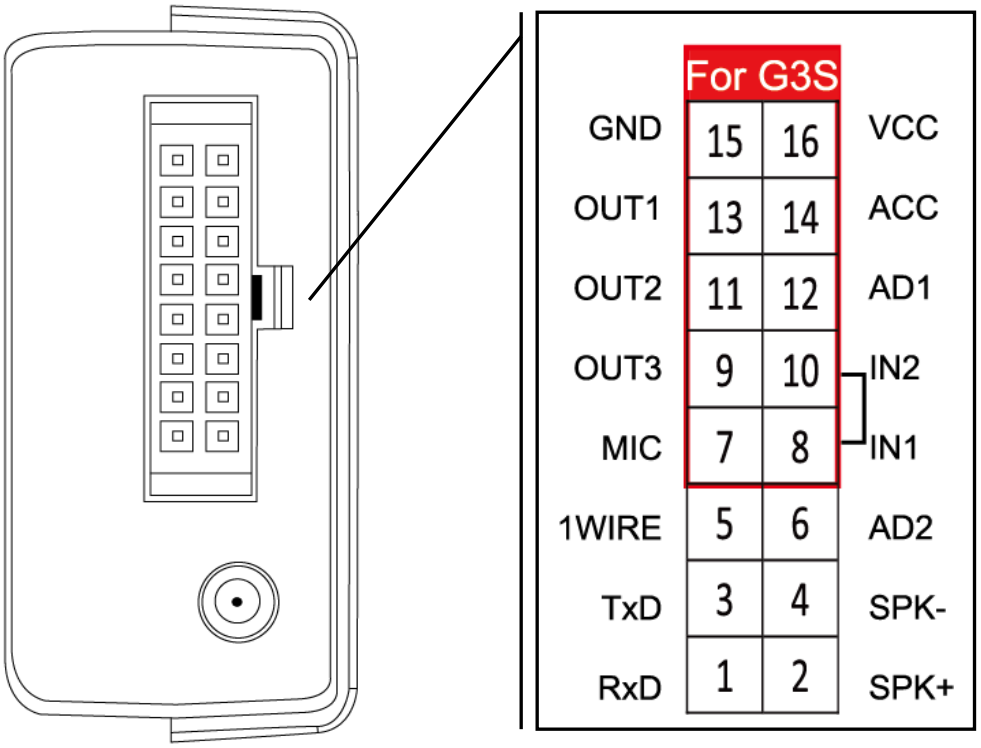
1234,BDS;1

Note: 1234 is the default user password to send command, and default is 1234,BDS;0 , and please set phone number as User number before sending this command.


0
THIS SIDE TOWARDS ENGINE
Nominal Voltage: 12VDC, Range: 8V - 32VDC
Backup Battery: 3.7V, 250mAh
Working Temperature: -40℃ to 80℃ w/o battery, -10℃ to 50℃ w/ battery
Charging Temperature: 0℃ to 40℃
THE OTHER SIDE TOWARDS SKY
Gosafe
CE 0678
1
3
2
GND OUT1 OUT2 OUT3 MIC 1WIRE TxD RxD
VCC ACC AD1 IN2 IN1 AD2 SPK- SPK+
15 16 13 14 11 12 9 10 7 8 5 6 3 4 1 2
For G3S

5. I/O Connector

■On the rear panel of device



PIN definition

PIN#	Color	Name	Definition	Remark/Default
1	***Green/White**	RxD	Receive serial link data	RS232
2	***Purple**	SPK+	Positive (+) of speaker	
3	***White/Black**	TxD	Transmit serial link data	RS232
4	***Orange/White**	SPK-	Negative (-) of speaker	
5	***Yellow/Black**	1WIRE	1WIRE link	
6	***Blue/White**	AD2/IN4	Analog/Digital input channel	High level active (>19V)
7	**Grey**	MIC	Microphone	
8	**Orange**	IN1	Digital input channel 1	Low level active
9	**Brown**	OUT3	Digital output channel 3	
10	**Red/Black**	IN2	Digital input channel 2	Low level active
11	**Yellow**	OUT2	Digital output channel 2	
12	**Green**	AD1/IN3	Analog/Digital input channel	High level active (>6V)
13	**Blue**	OUT1	Digital output channel 1	
14	**White**	ACC	ACC/Ignition signal input	High level active
15	**Black**	GND	Negative (-)	
16	**Red**	VCC	Positive (+)	8V-32V DC

*NOTE: * indicates only for G6S*

6. LED Indicator Behavior

■GSM LED: Green

Server socket connected: Flash once quickly every 3 seconds

GSM network registered: Flash twice quickly in a row every 3 seconds

GSM network unregistered: Flash 3 times quickly in a row every 3 seconds

SIM card error: Flash 4 times quickly in a row every 3 seconds

Serial link communication error: Flash 5 times quickly in a row every 3 seconds

GSM module OFF: Never flash

■GPS LED: Yellow

GPS fixed: Flash once quickly every 3 seconds

GPS unfixed: Flash twice quickly in a row every 3 seconds

GPS communication error: Flash 3 times quickly in a row every 3 seconds

GSM module OFF: Never flash

■Power LED: Red

Using external power supply: Flash once quickly every 3 seconds

Using backup battery: Flash twice quickly in a row every 3 seconds

Backup battery low voltage: Flash 3 times quickly in a row every 3 seconds

Under iButton mode: Glowing constantly

Set successfully: Flash once every 1 second

7. User Command

■Set User Phone Number

There are 2 users phone supported by G6S, they have the same authorization.
User1's command words are ***UNO0, UPW0, USP0***.
User2's command words are ***UNO1, UPW1, USP1***.
Below will take user1 as example:
To set your cell phone number as User1 to control and receive messages from device, please send ***UNO*** command to the device, e.g.:

1234,UNO0;+8613912345678

Or

1234,UNO0;13912345678

Explanations:
1234: Default password.
UNO0: Command control word for setting user number.
+8613912345678: Phone number with country code.
13912345678: Phone number without country code.
Device is supposed to reply a confirmation SMS to you, if the device does not accept the command, it also reply a message with content: **Command err**.

■Modify User Password

Factory default password **1234**
Changing the factory password at the first usage is highly suggested.
New password should be 4 digits that from number "0-9".
To modify password, send ***UPW*** command from your USER phone number, e.g.:

1234,UPW0;5678

Explanations:
1234: Factory Password
UPW0: Command control word for setting new password
5678: New Password

■Set position report interval to user phone

Device is able to report its current position periodically according to the setting, default is every 30 minutes. To change it please send ***USP*** command, e.g.:

1234,USP0;0;30S;G;W

Explanations:
1234: User password
USP0: Command control word

0: Interval Mode, related with dynamic report condition
0: Mode0
1: Mode1

30S: Report interval
S: Second, range from 30 to 900.
M: Minute, range from 15 to 59.
H: Hour, range from 1 to 240.

G: Working mode
O: Disable periodically report to USER.
G: GPS location information as first priority, if it is invalid, will be replaced by LBS information.
S: Using LBS information only.
L: Device will voice call USER periodically for voice monitoring purpose.

W: Location information type
T: Text for current location, showing GPS coordinate.
W: Google map hyper link for current location.

8. Message Explanation

■Periodical SMS report

Below are the different kinds of message will be received by user periodically according to the setting of command ***USP***, example on G6S.

"W" mode

1. GPS is fixed

Content of message	*Explanation*
G6S V1.00	*Device name/Firmware version*
LTM 2013-06-06 14:17:12	*Date/Time*
http://maps.google.com/maps?q...	*Google map hyper link*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.08V	*External power voltage*
BAT=3.86V	*Built-in battery voltage*
#30	*Consumed messages*

There are 2 kinds of map hyper link available, static and dynamic, it depends on the setting of command USP, e.g.:

Static link:

http://maps.google.com/staticmap?zoom=14&size=300x300&markers =%n(,%e&sensor=false

Dynamic link:

URL0;http://maps.google.com/maps?q=%n(,%e&t=m&z=16

2. GPS is not fixed

Map hyper link will be LBS (URL1) instead of GPS (URL0)

Content of message	*Explanation*
G6S V1.00	*Device name/Firmware version*
LTM 2013-06-06 14:17:12	*Date/Time*
http://maps.google.com/maps?q...	*Google map hyper link*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.08V	*External power voltage*
BAT=3.86V	*Built-in battery voltage*
#30	*Consumed messages*

"T" mode

1. GPS is fixed

Content of message	*Explanation*
G6S V1.00	*Device name/Firmware version*
LTM 2013-06-06 09:41:22	*Date/Time*
GPS 1.55/0.50/3/4	*HDOP/ALTITUDE in meter/Fixed satellite number/Time of first fixed*
N23.164302	*N means north/S means south*
E113.428456	*E means east/W means west*
SPD:0km/h 0	*Speed/Heading*
GSM -52dBm	*GSM signal strength*
EXT_PWR=12.13V	*External power voltage*
BAT=3.96V	*Built-in battery voltage*
#27	*Consumed messages*

2. GPS is not fixed, using LBS instead

Content of message	*Explanation*
G6S V1.00	*Device name/Firmware version*
LTM 2013-02-28 23:51:09	*Date/Time*
MCC/MNC/LAC/CID/RSSI	*Base station information type*
460/0/2503/962C/-53dBm	*Main station, MNC/MNC/Local area code/Station ID/Signal strength*
460/0/2731/40F4/-60dBm	*Neighbor station 1*
460/0/2703/4050/-70dBm	*Neighbor station 2*
GSM -58dB	*GSM network signal strength*
EXT_PWR=5.13V	*External power voltage*
BAT=4.17V	*Built-in battery voltage*
#20	*Consumed messages*

■Event SMS report

If an assigned event is triggered, device will send notify SMS to user according to the setting.

"W" mode

1. GPS is fixed

Content of message	*Explanation*
G6S V1.00	*Device name/Firmware version*
LTM 2013-06-06 14:17:12	*Date/Time*
http://maps.google.com/maps?q...	*Google map hyper link*
ETD:6/ACC ON	*Event ID/User defined event name/Data*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.08V	*External power voltage*
BAT=3.86V	*Built-in battery voltage*
#301	*Consumed messages*

3. GPS is not fixed

Map hyper link will be LBS (URL1) instead of GPS

Content of message	*Explanation*
G6S V1.00	*Device name/Firmware version*
LTM 2013-06-06 14:17:12	*Date/Time*
http://maps.google.com/maps?q...	*Google map hyper link*
ETD:6/ACC ON	*Event ID/User defined event name/Data*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.08V	*External power voltage*
BAT=3.86V	*Built-in battery voltage*
#301	*Consumed messages*

"T" mode

1, GPS is fixed

Content of message	*Explanation*
G6S V1.00	*Device name/Firmware version*
LTM 2013-02-28 23:51:09	*Date/Time*
GPS 1.55/0.50/3/4	*HDOP/ALTITUDE in meter/Fixed satellite number/Time of first fixed*
N23.164302	*N means north/S means south*
E113.428456	*E means east/W means west*
SPD:0km/h 0	*Speed/Heading*
ETD:6/ACC ON	*Event ID/User defined event name/Data*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.13V	*External power voltage*
BAT=3.96V	*Built-in battery voltage*
#28	*Consumed messages*

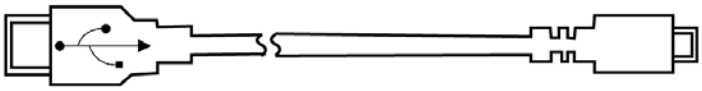
2. GPS is not fixed, using LBS instead

Content of message	*Explanation*
G6S V1.00	*Device name/Firmware version*
LTM 2013-02-28 23:51:09	*Date/Time*
MCC/MNC/LAC/CID/RSSI	*Base station information type*
460/0/2503/962C/-53dBm	*Main station, MNC/MNC/Local area code/Station ID/Signal strength*
460/0/2731/40F4/-60dBm	*Neighbor station 1*
460/0/2703/4050/-70dBm	*Neighbor station 2*
ETD:6/ACC ON	*Event ID/User defined event name/Data*
GSM -52dBm	*GSM network signal strength*
EXT_PWR=12.13V	*External power voltage*
BAT=3.96V	*Built-in battery voltage*
#28	*Consumed messages*

Appendix

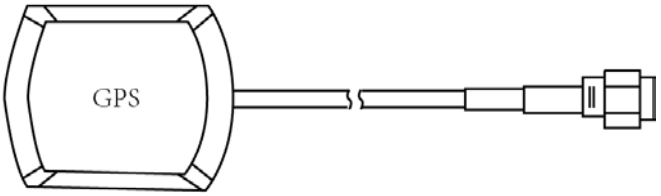
Optional accessory

■USB cable

To the computer that runs configuration tool		To the front panel of device

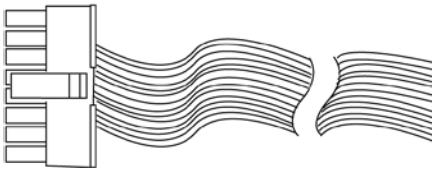
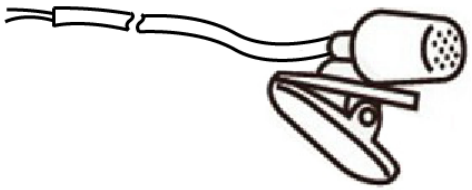
■GPS external antenna

Item		Parameter
Antenna	Center Frequency	1575.42±1MHz
	Band Width	CF±5MHz
	Polarization	RHCP
	Gain	5dBic（Zenith）
	V.S.W.R	＜1.5
	Impendence	50Ω
	Axial Ratio	3dB（max）
	Dimension	25*25*300cm
LNA	Gain	28±2dB
	Noise Figure	＜1.5
	Filter Insertion Loss	＜3dB
	Ex-band Attenuation	12dB@CF+50MHz/16dB@CF-50MHz
	Supply Voltage	2.2~5V DC
	Current Consumption	5~15mA
	V.S.W.R	＜2.0
Mechanical	Cable	RG174---3M
	Connector	SMA
	Redone Material	ABS
	Mounting Method	Magnet
Environmental	Operating Temperature	-40℃~+85℃
	Relative Humidity	Up to 95%
	Ingress Protection	IP65~IP67
	Vibration	10 to 55Hz with 1.5mm amplitude 2hours
	Environmentally Friendly	ROHS Compliant

Expose this terminal under the sky		To the rear panel of device, GPS antenna connector

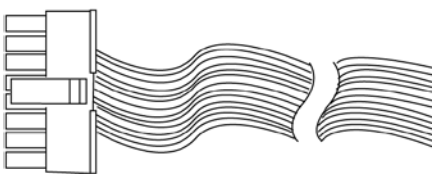
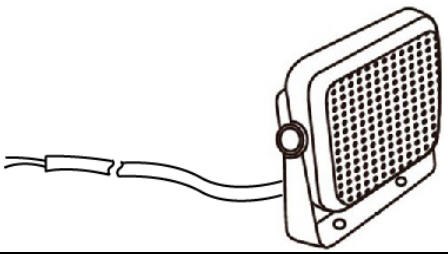
■Microphone

Item	Parameter
Length	3 meters
Material	Al-Si
Output impedance	2.2Kohm
Sensitivity	-30db to 60db
Frequency	50HZ to1600HZ
Channel	Stereo

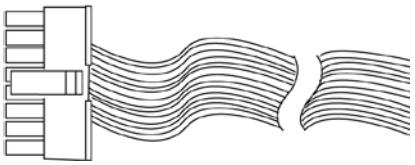
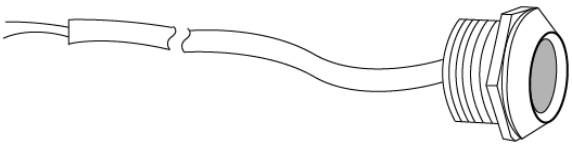
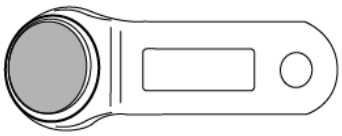
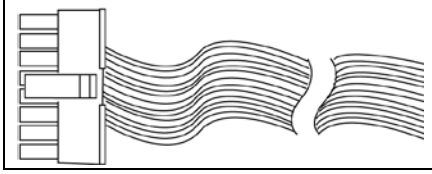
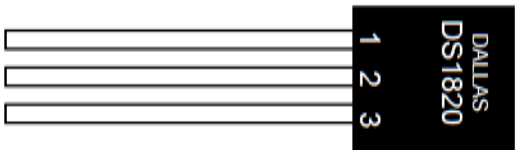
PIN15 PIN7 	Black wire: To PIN15 Red wire: To PIN7 	This accessory is necessary for voice related functionalities.

■Speaker

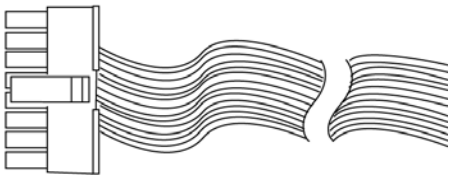
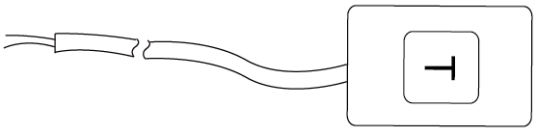
Item	Parameter
Length	3 meters
Impedance	16ohm
Sensitivity	96db/W
Frequency	50HZ to1600HZ
Signal to noise ratio	75db
Power consumption	1W

PIN16 PIN15 PIN4 PIN2 	Red: To PIN16 Black: To PIN15 White: To PIN4 Blue: To PIN2 	This accessory is necessary for voice related functionalities.

■1-Wire

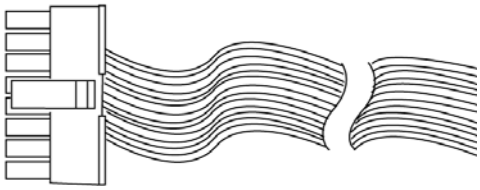
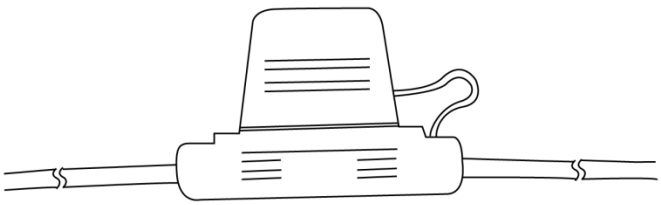
PIN15 PIN5 	White wire: To PIN15 Red wire: To PIN5 	Driver ID application 
PIN15 PIN5 	1 & 3: To PIN15 2: To PIN5 	

■Panic button

PIN8/10 PIN15 	Black/White wire: To PIN8/10 Black wire: To PIN15 	Press button to send SOS message/call from G6S/G3S

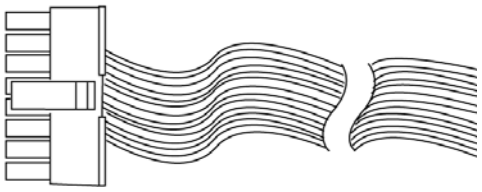
■Fuse

This accessory protects the device when illegal power supply has been connected.

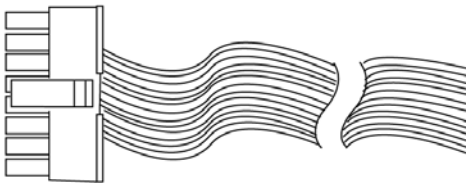
PIN16 	Red wire: PIN16 	To external power supply

■RS232 to DB9

PIN1 PIN3 PIN15	Green wire: To PIN1 Yellow wire: To PIN3 Black wire: To PIN15	To Female DB9 interface

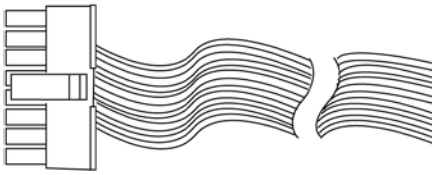
		

■RS232 to GARMIN interface

PIN16 PIN15 PIN3 PIN1 	Power cable: Black: To PIN15 Red: To PIN16 Data cable: Brown: To PIN15 White: To PIN3 Yellow: To PIN1 	To GARMIN PND

■Immobilizer

Immobilizer is an electronic security device fitted to an automobile that prevents the engine from running, it can be control by digital output channel from G6S/G3S

PIN9/11/13 	85: To +12V/24V 86: To PIN9/11/13 87a & 30: Between ignition wire